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## (12) 按照专利合作条约所公布的国际申请

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(81) 指定国(国家): AE(UM), AG, AL(UM), AM(UM), AT(+UM), AU, AZ(UM), BA, BB, BG(UM), BR(U), BY(UM), BZ(UM), CA, CH, CN(UM), CO, CR(UN), CU, CZ(+UM), DE(+UM), DK(+UM), DM, DZ, EC(UM), EE(+UM), ES(UM), FI(+UM), GB, GD, GE(UM), GH, GM, HR, HU(UM), ID, IL, IN, IS, JP(UM), KE(UM), KG(UM), KP, KR(UM), KZ(U), LC, LK, LR, LS(UM), LT, LU, LV, MA, MD(UM), MG, MK, MN, MW, MX(UM), MZ(UM), NI, NO, NZ, OM, PH(UM), PL(UM), PT(+UM), RO, RU(U), SC, SD, SE, SG, SK(+UM), SL(UM), TJ(UM), TM, TN, TR(UM), TT, TZ, UA(UM), UG, US, UZ(UM), VC, VN, YU, ZA, ZM, ZW

(84) 指定国(地区): ARIPO专利(+UM)(GH, GM, KE, L, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), 欧亚专利(AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), 欧洲专利(AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SI, SI, SK, TR), OAPI专利(UM)(BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TC)

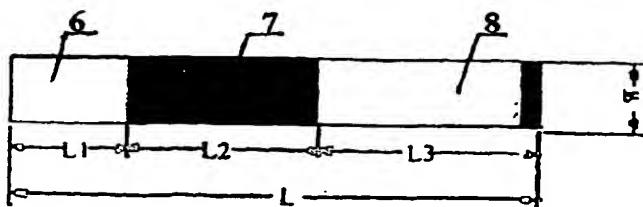
UM:实用新型; +UM:专利和实用新型

本国际公布:  
— 包括国际检索报告。

所引用双字母代码和其它缩写符号,请参考刊登在每期PCT公报起始的“代码及缩写符号简要说明”。

(52) THIS IS A NON-SYMMETRIC DRIVE PIEZO CERAMIC TRANSFORMER

(54) 发明名称: 一种非对称驱动型压电陶瓷变压器



WO 2004/086525 A1

(57) Abstract: A non-symmetric drive piezo ceramic transformer has been disclosed in the present invention. The non-symmetric drive piezo ceramic transformer has three regions that divided by rectangular piezo ceramic body along width direction of the length: the first region is the oscillating node accommodate region of the length adjusting, that the change of length can adjust the oscillating frequency and the oscillating node of the piezo ceramic transformer; the second region is input drive section which upper or lower surface have been coated with electrodes and polarized in the direction of the thickness of the body; the third region is the output generating section which output terminals are coated with electrodes and polarized in the direction of the length of the body. The piezo ceramic transformer having above construct has the advantages of smaller dimensions, less input phase changes, less generating heat, higher efficiency, and the piezo ceramic transformer has the adjustable oscillating frequency and the oscillating node simply formation process, lower cost of fabrication. The piezo ceramic transformer may be suitable to back-light sources of driving cold cathode fluorescent lamps in the high voltage power sources and liquid crystal displays.

[见续页]



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(57) 摘要

本发明公开了一种非对称驱动型压电陶瓷变压器，它是沿着长度方向将矩形压电体分为三个区：第一区为长度可调节的振动节点可调区，改变其长度可用来调整压电陶瓷变压器的谐振频率和振动节点；第二区为输入驱动区，其上下表面涂有平面电极，沿厚度方向极化；第三区为输出发电区，其输出端头涂有电极，沿长度方向极化。具有上述结构的压电陶瓷变压器具有体积小，输入相位小、发热少，效率高，谐振频率和振动节点可调，制作工艺简单，制造成本低的优点。此压电陶瓷变压器可广泛用于高压电源、液晶显示器中驱动冷阴极荧光灯的背光电源中。

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/CN/03/00440

## A. CLASSIFICATION OF SUBJECT MATTER

H01L41/107,H01L41/08

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

H01L41/107, 41/08,41/22,41/24

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPI,EPODOC,PAJ,CNPAT

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US6278226B1(Dong II Technology Ltd.),21.Aug.2001,See column 3 Line 27-column 5 line 5,Figs 2-8.	1-6
Y	JP7-176804A(NEC Corp.),14.Jul.1995,See column 7 Line 4-column 9 line 28,Figs 1-6.	1-6
A	JP10-200174A(TAMURA SEISAKUSHO KK),31.Jul.1998, see the whole document	1-6
A	JP8-139383A(TAMURA SEISAKUSHO KK),31.May.1996, see the whole document	1-6

Further documents are listed in the continuation of Box C.  See patent family annex.

\* Special categories of cited documents:

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier application or patent but published on or after the international filing date
- "L" document which may throw doubts on priority claim (S) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search  
6.Aug.2003

Date of mailing of the international search report

**28 AUG 2003 (28.08.03)**

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**INTERNATIONAL SEARCH REPORT**  
Information on patent family members

International application No.

PCT/CN03/00440

Patent document Cited in search report	Publication date	Patent family member(s)	Publication date
US.B1,6278226	21.Aug.2001	TW420884B DE19951301A JP2001156356A	01.Feb.2001 31.May.2001 08.Jun.2001
JP7-176804A	14.Jul.1995	none	
JP10-200174A	31.Jul.1998	none	
JP8-139383A	31.May.1996	none	

## 国际检索报告

国际申请号

PCT/CN03/00440

## A. 主题的分类

H01L41/107, H01L41/08

按照国际专利分类表(IPC)或者同时按照国家分类和 IPC 两种分类

## B. 检索领域

检索的最低限度文献(标明分类体系和分类号)

H01L41/107, H01L41/08, 41/22, 41/24

包含在检索领域中的除最低限度文献以外的检索文献

在国际检索时查阅的电子数据库(数据库的名称和, 如果实际可行的, 使用的检索词)

WPI, EPODOC, PAJ, CNPAT

## C. 相关文件

类 型*	引用文件, 必要时, 指明相关段落	相关的权利要求编号
Y	US6278226B1,2001年8月21日, 第3栏第27行至第5栏第5行, 图2-8	1-6
Y	特开平7-176804,1995年7月14日, 第7栏第4行至第9栏第28行, 图1-6	1-6
A	特开平10-200174,1998年7月31日, 全文	1-6
A	特开平8-139383,1996年5月31日, 全文	1-6

 其余文件在 C 栏的续页中列出。 见同族专利附件。

\* 引用文件的专用类型:

“A” 明确叙述了被认为不是特别相关的一般现有技术的文件

“E” 在国际申请日之后公布的在先的申请或专利

“L” 可能引起对优先权要求的怀疑的文件, 为确定另一篇引用文件的公布日而引用的或者因其他特殊理由而引用的文件

“O” 涉及口头公开、使用、展览或其他方式公开的文件

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“&amp;” 同族专利成员的文件

国际检索实际完成的日期

06.8月.2003

国际检索报告邮寄日期

28. 8月 2003 (28.08.03)

国际检索单位名称和邮寄地址

ISA/CN

中国北京市海淀区西土城路6号(100088)

传真号: 86-10-62019451

受权官员



电话号码: 86-10-62093839

国际检索报告  
关于同族专利成员的情报

国际申请号  
PCT/CN03/00440

检索报告中引用的专利文件	公布日期	同族专利成员	公布日期
特开平 7-176804	14.7 月 1995	无	
US6278226B1	21.8 月 2001	TW420884B	1.2 月 2001
		DE19951301A	31.5 月 2001
		JP2001156356	08.6 月 2001
特开平 10-200174	31.7 月 1998	无	
特开平 8-139383	31.5 月 1996	无	